AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for the non-invasive early detection of colon cancer ~~and/~~or intestinal cancer precursor cells by means of mutational analysis of the genes for APC, K-ras, β-catenin and B-raf in a sample,
characterized in that
the method comprises the following steps:
   - collecting a stool ~~and/or tissue~~ sample,
   - homogenizing the sample,
   - obtaining DNA from the sample,
   - performing an amplification reaction in the genes for APC, K-ras, β-catenin and B-raf,
     using the primers
     ~~s1 TTGCAGTTATGGTCAATACCC~~ SEQ ID NO. 1
     ~~as1 GTGCTCTCAGTATAAACAGGATAAG~~ SEQ ID NO. 2
     ~~s2 CCTCAAAAGGCTGCCACTTG~~ SEQ ID NO. 3
     ~~as2 CTGTGACACTGCTGGAACTTCGC~~ SEQ ID NO. 4
     ~~s3 AGCACCCTAGAACCAAATCCAGCAG~~ SEQ ID NO. 5
     ~~as3 TGGCATGGTTTGTCCAGGGC~~ SEQ ID NO. 6
     ~~s4 ACAAACCATGCCACCAAGCAGA~~ SEQ ID NO. 7
     ~~as4 GAGCACTCAGGCTGGATGAACAAG~~ SEQ ID NO. 8
     ~~s5 TTCCAGATGCTGATACTTTA~~ SEQ ID NO. 9
     ~~as5 CTGAATCATCTAATAGGTCC~~ SEQ ID NO. 10
     for APC, the primers
     ~~s CTGGTGGAGTATTTGATAGTG~~ SEQ ID NO. 11
     ~~as TCTATTGTTGGATCATATTC~~ SEQ ID NO. 12
     for K-ras, the primers
     ~~s CTGATTTGATGGAGTTGGAC~~ SEQ ID NO. 13
     ~~as CTTGAGTGAAGGACTGAGA~~ SEQ ID NO. 14
     for β-catenin, and the primers

~~s TGTATCACCATCTCCATATC~~ SEQ ID NO. 17
~~as GCATTCTGATGACTTCTGGT~~ SEQ ID NO. 18
for B-raf,
wherein amplification products are formed, and
- performing a mutational analysis in the amplification products.

2. (Original) The method according to claim 1,
characterized in that
the detection of mutations in selected sections of the genes for APC, K-ras, β-catenin and B-raf is effected by means of a DNA chip, said DNA chip including probes for APC, K-ras, β-catenin and B-raf from those regions of the above-mentioned genes that are flanked by the primer sequences specified in claim 1.

3. (Currently Amended) The method according to claim 1 ~~or 2~~,
characterized in that
the APC, K-ras, β-catenin and B-raf genes are accumulated from total DNA by hybridizing sequence-specific biotinylated oligonucleotides with the genes for APC, K-ras, β-catenin and B-raf using coupling of the biotin residue to streptavidin and subsequent separation via magnetic particles.

4. (Currently Amended) The method according to claims 1 ~~to 3~~,
characterized in that
amplification products, especially PCR products, are separated in an agarose gel for control purposes prior to purification.

5. (Currently Amended) The method according to ~~any of~~ claims 1 ~~to 4~~,
characterized in that
the mutational analysis of the PCR products is effected using electrophoretic techniques, preferably SSCP, alternatively by means of a chromatographic procedure, preferably an HPLC-based procedure.

6. (Currently Amended) The method according to ~~the preceding claim~~ claim 5,
characterized in that
detected mutagenic conformations of a single strand are isolated and optionally sequenced.

7. (Currently Amended) Primer sequences selected from the group comprising:
the primers
~~s1 TTGCAGTTATGGTCAATACCC~~ SEQ ID NO. 1
~~as1 GTGCTCTCAGTATAAACAGGATAAG~~ SEQ ID NO. 2
~~s2 CCTCAAAAGGCTGCCACTTG~~ SEQ ID NO. 3
~~as2 CTGTGACACTGCTGGAACTTCGC~~ SEQ ID NO. 4
~~s3 AGCACCCTAGAACCAAATCCAGCAG~~ SEQ ID NO. 5
~~as3 TGGCATGGTTTGTCCAGGGC~~ SEQ ID NO. 6
~~s4 ACAAACCATGCCACCAAGCAGA~~ SEQ ID NO. 7
~~as4 GAGCACTCAGGCTGGATGAACAAG~~ SEQ ID NO. 8
~~s5 TTCCAGATGCTGATACTTTA~~ SEQ ID NO. 9
~~as5 CTGAATCATCTAATAGGTCC~~ SEQ ID NO. 10
or alternatively
~~s2 GAATCAGCTCCATCCAAGT~~ SEQ ID NO. 15
~~as2 TTTCTGCTATTTGCAGGGT~~ SEQ ID NO. 16
for APC, the primers
~~s CTGGTGGAGTATTTGATAGTG~~ SEQ ID NO. 11
~~as TCTATTGTTGGATCATATTCG~~ SEQ ID NO. 12
for K-ras, the primers
~~s CTGATTTGATGGAGTTGGAC~~ SEQ ID NO. 13
~~as CTTGAGTGAAGGACTGAGAA~~ SEQ ID NO. 14
for β-catenin, and the primers
~~s TGTATCACCATCTCCATATC~~ SEQ ID NO. 17
~~as GCATTCTGATGACTTCTGGT~~ SEQ ID NO. 18
for B-raf.

8. Canceled.

9. (Currently Amended) A kit, comprising primers selected from the group comprising:
the primers
~~s1 TTGCAGTTATGGTCAATACCC~~ SEQ ID NO. 1
~~as1 GTGCTCTCAGTATAAACAGGATAAG~~ SEQ ID NO. 2
~~s2 CCTCAAAAGGCTGCCACTTG~~ SEQ ID NO. 3
~~as2 CTGTGACACTGCTGGAACTTCGC~~ SEQ ID NO. 4
~~s3 AGCACCCTAGAACCAAATCCAGCAG~~ SEQ ID NO. 5
~~as3 TGGCATGGTTTGTCCAGGGC~~ SEQ ID NO. 6

~~s4 ACAAACCATGCCACCAAGCAGA~~ SEQ ID NO. 7

~~as4 GAGCACTCAGGCTGGATGAACAAG~~ SEQ ID NO. 8

~~s5 TTCCAGATGCTGATACTTTA~~ SEQ ID NO. 9

~~as5 CTGAATCATCTAATAGGTCC~~ SEQ ID NO. 10

or alternatively

~~s2 GAATCAGCTCCATCCAAGT~~ SEQ ID NO. 15

~~as2 TTTCTGCTATTTGCAGGGT~~ SEQ ID NO. 16

for APC, the primers

~~s CTGGTGGAGTATTTGATAGTG~~ SEQ ID NO. 11

~~as TCTATTGTTGGATCATATTCG~~ SEQ ID NO. 12

for K-ras, the primers

~~s CTGATTTGATGGAGTTGGAC~~ SEQ ID NO. 13

~~as CTTGAGTGAAGGACTGAGAA~~ SEQ ID NO. 14

for β-catenin, and the primers

~~s TGTATCACCATCTCCATATC~~ SEQ ID NO. 17

~~as GCATTCTGATGACTTCTGGT~~ SEQ ID NO. 18

for B-raf,

and optionally information relating to combining the contents of the kit.

10. Canceled.

11. (New) A method for the detection of colon cancer or colon cancer precursor cells using the kit according to claim 9.